Proposal Reviews

#156: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

State University of New York, Albany

Initial Selection Panel Review	
Research and Restoration Technical Panel Review	
Bay Regional Review	
Delta Regional Review	
San Joaquin Regional Review	
Sacramento Regional Review	
External Scientific Review	#1 #2 #3 #4
Environmental Compliance	
Budget	

Initial Selection Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Initial Selection Panel Review

Proposal Number: 156

Applicant Organization: State University of New York, Albany

Proposal Title: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

Please provide an overall evaluation rating.

Explanation of Recommendation Categories: Fund

- **As Is** (a proposal recommended for funding as proposed)
- **In Part** (a proposal for which partial funding is recommended for selected project phases or components)
- **With Conditions** (a proposal for which funds are recommended if the applicant contractually agrees to meet the specified conditions)

Consider as Directed Action in Annual Workplan (a proposal addressing a high priority action that requires some revision followed by additional review prior to being recommended for funding)
Not Recommended (a proposal not currently recommended for funding-after revision may be considered in the future)

Note on "Amount":

For proposals recommended as Fund As Is, Fund In Part or Fund With Conditions, the dollar amount is the amount recommended by the Selection Panel.

For proposals recommended as Consider as Directed Action in Annual Workplan, the dollar amount is the amount requested by the applicant(s).

Fund	
As Is	**-**
In Part	**-**
With Conditions	**-**
Consider as Directed Action	**-**
Not Recommended	**X**

Amount: **$0**

Conditions, if any, of approval (if there are no conditions, please put "None"):

None

Provide a brief explanation of your rating:

The technical review panel expressed strong support for the science aspects of the proposal, but were concerned that the project had weak relevance to CALFED restoration efforts. The project will likely help confirm existing paleo-climate and paleo-hydrologic reconstructions and help characterize the uncertainty in the magnitude, duration, and recurrence interval of severe, sustained drought. However, it is unclear if the reconstructions proposed in this study will provide new information that is of use to CALFED decision-makers. The regional panels gave this proposal a low rating. The Selection Panel does not recommend funding this proposal.

Research and Restoration Technical Panel Review:

CALFED Bay-Delta 2002 ERP PSP
Research and Restoration Technical Panel Review Form

Proposal Number: 156

Applicant Organization: State University of New York, Albany

Proposal Title: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

Review:

Please provide an overall evaluation summary rating:

Superior: outstanding in all respects;
Above Average: Quality proposal, medium or high regional value, and no significant administrative concerns;
Adequate: No serious deficiencies, no significant regional impediments, and no significant administrative concerns;
Not Recommended: Serious deficiencies, significant regional impediments or significant administrative concerns.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
-Superior	**There is strong support for the science, but weak relevance to CALFED restoration efforts. The project may be justified in the sense that it will help confirm existing paleo-climate and paleo-hydrologic reconstructions and help characterize the uncertainty in the magnitude, duration, and recurrence interval of severe, sustained drought. The cost is very low (only 200K over 3 years), so the benefits of this study may outweigh the cost. However, there are already numerous paleo-hydrologic and paleo-climate reconstructions available, and it is unclear if the reconstructions proposed in this study will provide new information that is of use to decision-makers. The regional panels gave this proposal a low rating.**
-Above average	
XAdequate	
-Not recommended	

1. **Goals and Justification.** Does the proposal present a clear statement of goals, objectives and hypotheses? Does the proposal present a clear justification and conceptual model for the project?

   The goal of this project is clearly stated - to develop a well-dated 2000+ year reconstruction of hydrologic variability at Walker Lake. The project may be justified in the sense that it will help confirm existing paleo-climate and paleo-hydrologic reconstructions and help characterize the uncertainty in the magnitude, duration, and recurrence interval of severe, sustained drought. The cost is very low (only 200K over 3 years), so the benefits of this study may outweigh the cost.

2. **Likelihood of Success (Approach, Feasibility, Capabilities and Performance Measures).** Is the project likely to succeed based on the approach, feasibility and project team capabilities? Are the proposed performance measures adequate for measuring the project's success?

   The team appears to be capable of meeting the research objectives that are outlined in the proposal.

3. **Outcomes and Products.** Will the project advance the state of scientific knowledge in general and/or make an important contribution to the state of knowledge of the Bay-Delta Watershed? For restoration proposals, is the project likely to contribute to ecosystem restoration or species recoveries in a significant way? Will the project produce products useful to decision-makers and scientists?

   It is not clear that the planned reconstructions will result in a significant advancement in our understanding of past hydrologic variability. The additional information that will be gained from this project will probably not provide much additional guidance on past hydrologic variability to decision makers.

4. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The budget is very small - benefits are likely to far outweigh the costs.

5. **Regional Review.** How did the regional panel(s) rank the proposal (High, Medium, Low)? Did the regional panel(s) identify significant benefits (regional priorities, linkages with other activities, local involvement) or impediments (local constraints, conflicts with other activities, lack of local involvement) to this proposal? What were they?

   Regional panels for Sacramento, San Joaquin, and Delta all rated the proposal "Low." The Bay regional panel rated the proposal "Medium." Criticisms included "The proposed project would not appear to significantly improve upon previous studies such as Pyramid Lake, Tree Ring Data, etc." (Sacramento), and "Lack of confidence in technical assumptions" (San Joaquin), "...this basic research project appears to be far removed from the practical application of SJR and Bay-Delta restoration" (San Joaquin, also similar comments from Delta). Conversely, the Bay panel thought that this was an excellent proposal and that understanding droughts was central to many CALFED priorities.

6. **Administrative Review.** Were there significant concerns about the proposal with regard to the prior performance, environmental compliance and budget administrative reviews? What were they?

   No problems.

Miscellaneous comments:

None.

Bay Regional Review:

Proposal Number: 156

Applicant Organization: State University of New York, Albany

Proposal Title: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

Overall Ranking: **-**Low **X**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

Team thought it was an excellent proposal. However, it is not as time sensitive as other proposals reviewed.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   There are no Bay region constraints as no work will be done in the region. Samples have already been taken.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   XYes **-**No

   How?

   understanding the pattern of droughts is important to many of the CALFED priorities, especially M4-4 (Ensure restoration + water mgmt can be sustained under future climate conditions).

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   XYes **-**No

   How?

   Information will complement other similar research in the region. This will provide scientific data to help support restoration efforts.

4. Does the project adequately involve local people and institutions?

   XYes **-**No

How?

Information will complement other similar research in the region and the results will be available.

Other Comments:

The Bay panel were interested in the proposal. but were more interested inthe Blue Oak dating project not that the two proposals are exclusive

Delta Regional Review:

Proposal Number: 156

Proposal Title: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

Overall Ranking: **X**Low **-**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

The panel did not believe this investigation would yield information useful in planning Delta restoration.

1. Is the project feasible based on local constraints?

   XYes **-**No

   How?

   Analyses is on existing samples

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   -Yes **X**No

   How?

   Weakly linked to #8: Studies to better understand climate variability. The linkage of Walker Lake core samples to Delta weather patterns is a major stretch of rationale.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   -Yes **X**No

   How?

   No linkage to other Delta projects, rationale, or people working on Delta projects was discussed.

4. Does the project adequately involve local people and institutions?

   -Yes **X**No

   How?

No apparent discussion occurred with personnel who might apply this information to other activities that can help reach the CALFED objectives.

Other Comments:

d Walker Lake is in the rain shadow of the Sierras. How representative is the data to the Sierras and then correspondingly, to the Delta?

San Joaquin Regional Review:

Proposal Number: 156

Applicant Organization: State University of New York, Albany

Proposal Title: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

Overall Ranking: **X**Low **-**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

Not strongly related to the SJV. Lack of confidence in technical assuptions. Archaeological climate is no predcition of future climate as the climate is now changing. Chemical transformations occurr "after: the fact of the climatic condition causing them. It did not appear that this project alone would specifically ensure implementation of restoration actions in the future.

1. Is the project feasible based on local constraints?

   -Yes **X**No

   How?

   The most significant constraints for this study are the large number of technical unknowns and assumptions that can be argued, as described in the proposals own Background Section. The presence of many questions concerning the methods and theories proposing to be evaluated were identified.

   No specific local study site constraints are apparent. It may be worthwhile to note that any results of the study that may be applicable from a practical standpoint would pertain more significantly to 11 drainages on the eastern side of the Sierras, compared to only seven on the western side that may contribute to the Bay-Delta- including the Kern River.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   -Yes **X**No

   How?

   The proposal cites the Multi-regional Bay-Delta Area Priority No. 4 as the priority goal to which it pertains. However, that goal is to ensure that restoration actions throughout all regions can be sustained under future climatic conditions. This project proposes to study past drought patterns. As the climate has changed significantly over the past 2000 years and is now changing, its highly likely that even if the study could develop an accurate assessment of the drought patterns, they would not pertain to current or future climatic patterns.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   -Yes **X**No

   How?

   The study does not appear to be linked specifically with any other restoration or climate studies.

4. Does the project adequately involve local people and institutions?

   -Yes **X**No

   How?

   Although the principal study applicant is from the State University of New York, participants from the University of Southern California and Lawrence Livermore National Laboratory are included, in addition to participants from the USGS in Colorado and the University of Nevada. Site specific local participants do not appear to be involved.

Other Comments:

The potential benefits of this basic research project appear to be far-removed from the practical application of SJR and Bay-Delta restoration. The high variability in climatic conditions in California would make any potential usefulness of the information garnered from such a study limited. Further, even if this study could document historic drought patterns accurately, the climate has and is changing, so those patterns would no longer be applicable.

Sacramento Regional Review:

Proposal Number: 156

Applicant Organization: State University of New York, Albany

Proposal Title: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

Overall Ranking: **X**Low **-**Medium **-**High

Provide a brief summary explanation of the committee's ranking:

The proposed project would not appear to significantly improve upon previous studies such as Pyramid Lake, Tree Ring Data, etc.

1. Is the project feasible based on local constraints?

   -Yes **X**No

   How?

   N/A The proposed project is not closely relevant to the Sacramento region.

2. Does the project pursue the restoration priorities applicable to the region as outlined in the PSP?

   -Yes **X**No

   How?

   Not apparent from the application.

3. Is the project adequately linked with other restoration activities in the region, such as ongoing implementation projects and regional planning efforts?

   -Yes **X**No

   How?

   The proposal does not appear to be closely related to other ongoing regional activities or planning efforts.

4. Does the project adequately involve local people and institutions?

   -Yes **X**No

   How?

Other than presenting the project paper results to CALFED the proposal does not address how or who they would involve in the process.

Other Comments:

Although important work, the project does not appear greatly benificial to the region.

External Scientific: #1

Research and Restoration External Scientific Review Form

Proposal Number: **156**

Applicant Organization: **State University of New York, Albany**

Proposal Title: **Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**The product of this research is yet another paleo-climate reconstruction in the Sierra Nevada. It is difficult to see how the proposed work will result in new information that will be of use to decision-makers. However, the PI's only request a grand total of 200K - the proposed work will confirm existing studies and provide information on the uncertainty of paleo-climate reconsturctions, and as such, may be justified based on the small cost. The PIs appear to be capable of effectively completing their research objectives.**
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals in this project are clearly stated. The PIs propose to generate a well-dated, two-core composite record of hydrologic changes and droughts in Walker Lake. This research is important for planning purposes as the instrumental record provides an inadequate assessment of the probability of severe sustained drought - we need the paleo-hydrologic and paleo-climate reconstructions for a more complete assessment of hydrologic variability.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   It is difficult to see how the proposed study will provide new information on past hydrologic variability--there are already many hydrologic reconstructions avaliable for the Sierra Nevada. The project would be better justified if the PIs had presented information on the discrepencies in the timing and duration of droughts in other paleo-climate records. Nevertheless, the research will be important in confirming the results of existing studies and characterising the uncertainty in paleo-hydrologic and paleo-climate reconstructions. Note that the PIs only request 200K (for the three years) to do this work. While this project may not generate too much novel information, the small budget may justify funding the proposal.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   For the most part the approach seems solid and appropriate for meeting the project objectives. However, the PIs are unclear about how they will relate the Sierra Nevada hydrologic balance to regional climate forcing associated with ENSO and PDO. The records of sea surface temperatures that provide information on ENSO and PDO will be too short to explain the decadal and centennial-scale variations in the Walker Lake reconstructions. Are the PIs planning on relating the Walker Lake reconstructions to paleo reconstructions of ENSO or PDO? If so, what is the source of those reconstructions? Are the reconstructions accurate enough to get meaningful results?

   This research is important for decision-makers in that the instrumental record provides an inadequate assessment of the probability of drought. Whether or not the proposed research will provide new information is open to question.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The approach is technically feasible. The PIs should have no problem in successfully completing the proposed work.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   Performance measures are described in terms of information output. These measures are appropriate for this project.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The product of this research is yet another paleo-hydrologic reconstruction. This is of value in the sense that it will help confirm the results of existing studies and provide information on the uncertainty in paleo-hydrologic and paleo-climate reconstructions. This project will probably not result in a significant advancement in our understanding of past hydrologic variability in the

Sierra Nevada.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The PIs appear to be capable of effectively implementing the proposed project.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   The budget is very small. Even though the project will result in limited new information, funding may be justified based on the small cost.

Miscellaneous comments:

None.

External Scientific: #2

Research and Restoration External Scientific Review Form

Proposal Number: **156**

Applicant Organization: **State University of New York, Albany**

Proposal Title: **Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

<u>Excellent:</u> outstanding in all respects;
<u>Good:</u> quality but some deficiencies;
<u>Poor:</u> serious deficiencies.

Overall Evaluation Summary Rating	Provide a brief explanation of your summary rating
XExcellent	**I judge this proposal to be excellent, based on a comparison of zillions of proposals during my long history of reviewing NSF proposals. This one stands out in tackling a very interesting and important regional problem with state-of-the-art thinking and a top-flight team. The comparison of the new data with the Pyramid Lake record is vitally important and will contribute in a major way to the overall paleoclimate problem of the region.**
-Good	**The proposal rightly places establishing a precise age model as the critical first step. The need for 1-cm sampling of WLC-001 is needed to match the work already completed on WLC-002. And, understanding the significance of TIC delta18-O is paramount.** **I suspect this high-resolution multitracer study will uncover a beautiful record of not only severe droughts, but of droughts in general as well as periods of above-normal precipitation for the past 2 ky. If the records correlate with the Pyramid Lake record, then it will establish an important regional signal. If the two records do not correlate, then it will point to a renewed effort to locate the regional record.** **This one can't miss.**
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals are clearly laid out, are vitally important to understanding whether the paleoclimate record at Walker Lake is local or regional, and are achievable.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   Yes, the question of whether the Pyramid Lake record is local or regional is important to answer because so many studies rely on the interpretations from it. The proposed study will answer the question and be of value in its own right, regardless of the outcome.

   It appears to me that considerable work has already been done on one of the Walker Lake cores and additional studies on WLC-002 are warrented and a full workup on WLC-001 is vital.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

The approach is well planned and the cooperative studies will greatly enhance the results. The planned research seems to be laid out in such a way that success is virtually a slam dunk. My only comment would be to ask for more AMS 14-C dates, probably 25 more to give one date every 25 cm down one core, to ensure a well-dated sequence. That would ensure that the Walker Lake record would become the standard with which all other records are compared.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The research outlined is technically feasible and the PI is certainly well qualified to do the work outlined. His collaborators are also all well qualified to do their parts and I feel sure that the prospect for sucess is 100%.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   This really doesn't apply to this type of research. Each of the geochemical analyses proposed will use standard procedures and there is no reasone to believe any parameter will not be measured.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The products will be scientific papers at national meetings and scientific papers in peer-reviewed journals. The PI is well known in the field of paleoceanography and paleoclimatology and is a producer. This work will get a lot of exposure.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   The PI and his collaborators are all well known and have impressive track records of getting the work out. The team is well qualified to tackle the problem and I have no doubts that the results will be impressive.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   the budget is reasonable although I would add an additional 25 AMS 14-C dates to the budget.

Miscellaneous comments:

External Scientific: #3

Research and Restoration External Scientific Review Form

Proposal Number: **156**

Applicant Organization: **State University of New York, Albany**

Proposal Title: **Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

None

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**This is an excellent reasonably priced proposal which could add much new knowledge of the past climatic history of the eastern and central California region. But I'm not sure how much it would tell us about the northern Sacramento River region where much of the water originates.**
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goal, as set forth on page 1, is to develop a long record of the hydrology of the Walker Lake basin and its variations back in time. Several different indicators of climatic history are to be used which should add strength to the reconstruction. The time scale is in hundreds and thousands of years, for broad scale look.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

The proposal would develop much new knowledge on the eastern Sierra, using some existing isotope measurements and other indicators as well as procuring and processing much new data. It would be great to have confirmation and added insight into the epochal century long severe droughts reported by Dr. Scott Stine in the 900 to 1350 AD period. Thus these studies would extend much further back than the 500 years or so expected from the blue oak chronology (in another proposal), but not with the same year by year resolution. Although correlations of Walker River runoff are fairly high for San Joaquin River hydrologic region streams, they may not be as good for the total Bay-Delta watershed, including the Sacramento River system with its big contribution from more northern areas.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   The approach is very comprehensive and relies on a number of methods and researchers. It should develop a lot of paleoclimatic information not now available.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   In that the work is based on previously used and tested methodology, it should yield good results. The multi-indicator approach provides robustness to the reconstruction. Skill probably be needed to meld all the data into a consistent reliable picture. They do have some preliminary results to start with from limited earlier sampling and this will help guide the work into productive lines.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   As noted , a number of proxies will be analyzed to see what they show on past climate conditions. The different tools are described in good detail in the proposal. The authors also will provide quarterly results.

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   The reconstruction of past Walker Lake and River conditions and hydrology would be valuable for the eastern Sierra with considerable commonality to the San Joaquin River hydrologic region. I'm sure the added new sampling data to be obtained with this proposal will provide much new data for other researchers to build upon.

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   I don't know the researchers, except for Dr. Lund of USC, who does have experience in this field. In looking at the wide variety of sampling and testing to be done, it looks like Dr. Linsley has assembled a capable team.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   Costs are relatively modest at about $ 215,000, perhaps because they are building on some past field sampling. In this respect, the benefits should exceed costs by a wide margin. But results are going to be more general than the year by year reconstructions by other methods.

Miscellaneous comments:

It would be good to try to tie down whether the Walker Lake indicators support the sustained severe drought periods prior to 1400, just for the sake of overall water contingency planning, but I'm not sure of how useful this would be to CalFed planning now.

External Scientific: #4

Research and Restoration External Scientific Review Form

Proposal Number: **156**

Applicant Organization: **State University of New York, Albany**

Proposal Title: **Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years**

Conflict of Interest Statements:
I have no financial interest in this proposal.
XCorrect
-Incorrect

In the blank below please explain any connection to proposal, to applicant, co-applicant or subcontractor or to submitting institution (write "none" if no connection):

none

Review:

Please provide an overall evaluation summary rating:

Excellent: outstanding in all respects;
Good: quality but some deficiencies;
Poor: serious deficiencies.

Overall Evaluation Summary Rating	**Provide a brief explanation of your summary rating**
-Excellent	**The proposed research is EXCELLENT, but the direct connection to the CALFED Bay-Delta Restoration Program is dubious. The SF-Bay catchment (and the entire state of CA) is extremely sensitive to subtle climate change and long-term regional records of climate change may be useful to the Bay-Delta Restoration Program, but the interesting proposal by Linsley is not carefully intertwined with the SF Bay-Delta Restoration Programs's immediate and high priority needs.**
XGood	
-Poor	

1. **Goals.** Are the goals, objectives and hypotheses clearly stated and internally consistent? Is the concept timely and important?

   The goals and objectives of this proposal are extremely well stated, and the concepts are definitely timely and important. With that said, I question the direct connection to the CALFED SF-Bay Delta Restoration Program. Yes, the indirect connection is implicit, but much more explicit connection is required for this research to be considered "timely and important" for the SF-Bay Estuary -Delta Restoration Program.

2. **Justification.** Is the study justified relative to existing knowledge? Is a conceptual model clearly stated in the proposal and does it explain the underlying basis for the proposed work? Is the selection of research, pilot or demonstration project, or a full-scale implementation project justified?

   The proposal is certainly justified relative to existing knowledge. The author places his work into a well established conceptual model. Global justification for the work is clear, but regional justification (i.e. SF-Bay's catchment) is somewhat nebulous in terms of catchment-specific funding.

3. **Approach.** Is the approach well designed and appropriate for meeting the objectives of the project? Are results likely to add to the base of knowledge? Is the project likely to generate novel information, methodology or approaches? Will the information ultimately be useful to decision-makers?

   Yes, the proposed approach apppears thoughtful and sound, and will likely yield clear and informative information regarding the Walker Lake Basin and Sierra Nevada catchments. I do not see clear and definitive information being generated for decision makers in terms of the SF-Bay catchment.

4. **Feasibility.** Is the approach fully documented and technically feasible? What is the likelihood of success? Is the scale of the project consistent with the objectives?

   The approach is clearly feasible, and the probability for success is very high.

5. **Project-Specific Performance Measures.** Does the project include appropriate performance measures to measure success relative to the project's goals and objectives? Is there enough detail as to how the performance measures will be quantified? For restoration projects, are monitoring plans explicit and detailed enough to determine if performance measures will be adequately assessed?

   see #4

6. **Products.** Are products of value likely from the project? Specifically for restoration projects, are products of value also likely from the monitoring component? Are interpretative outcomes likely from the project?

   see #4

7. **Capabilities.** What is the track record of applicants in terms of past projects? Is the project team qualified to efficiently and effectively implement the proposed project? Do they have available the infrastructure and other aspects of support necessary to accomplish the project?

   Dr. Linsley's track record is very strong and it is almost certain that the proposed project will be excuted, analyzed, and published with great success.

8. **Cost/Benefit Comments.** Is the budget reasonable and adequate for the work proposed?

   seems very reasonable for what has been proposed

Miscellaneous comments:

Environmental Compliance:

Proposal Number: 156

Applicant Organization: State University of New York, Albany

Proposal Title: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

1. Are the legal or regulatory issues that affect the proposal identified adequately in the proposal?

   XYes **-**No

   If no, please explain:

   However, no CEQA or NEPA (CAT Ex) documentation would be necessary.

2. Does the project's timeline and budget reflect adequate planning to address legal and regulatory issues that affect the proposal?

   XYes **-**No

   If no, please explain:

3. Do the legal and regulatory issues that affect the proposal significantly impair the project's feasibility?

   -Yes **X**No

   If yes, please explain:

Other Comments:

Budget:

Proposal Number: 156

Applicant Organization: State University of New York, Albany

Proposal Title: Utilizing Tracers in Walker Lake Sediments to Reconstruct the Timing of Severe Droughts in the Sierra Nevada and Bay-Delta Area Over the Last 2000 Years

1. Does the proposal include a detailed budget for each year of requested support?

   XYes -No

   If no, please explain:

2. Does the proposal include a detailed budget for each task identified?

   XYes -No

   If no, please explain:

3. Does the proposal clearly state the type of expenses encompassed in indirect rates or overhead costs?

   XYes -No

   If no, please explain:

4. Are appropriate project management costs clearly identified?

   XYes -No

   If no, please explain:

5. Do the total funds requested (Form I, Question 17A) equal the combined total annual costs in the budget summary?

   XYes -No

   If no, please explain (for example, are costs to be reimbursed by cost share funds included in the budget summary).

6. Does the budget justification adequately explain major expenses?

   XYes -No

   If no, please explain:

7. Are there other budget issues that warrant consideration?

-Yes **X**No

If yes, please explain:

Other Comments: